SIEMENS

MAMMOMAT Novation

SP

Installation Instructions

System

with WH AWS

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Configuration

The configuration of the MAMMOMAT Novation^{DR} installation depends on the customer"s choice.

Tab. 1 Configuration

MAMMOMAT Novation^{DR}
⇓
Integrated Generator
⇓
Molybdenum/tungsten anode X-ray tube assembly with filter disc Mo 0.03/Rh 0.025/Rh 0.050
⇓
Dose Calculation System
⇓
Control console with integrated radiation shield (optional)
⇓
Acquisition Workstation

Unless otherwise stated, these instructions describe the

- MAMMOMAT Novation^{DR} stand with the integrated generator,
- the radiation shield with the integrated control console
- the detector and
- the syngo Acquisition Workstation.

Depending on the installation configuration, some points may be omitted.

Tools

Item	Remarks
Standard installation and service tools	
Torque wrench for bolting the stand/console to the floor	
Electrical screwdriver with adjustable torque is recommended	

Symbols

This symbol indicates exposure of X-ray radiation.

This symbol indicates that the measured values have to be entered in the Installation Protocol (SPB7-250.813.01...).

Factory adjustments

The **MAMMOMAT Novation^{DR}** is adjusted, programmed and tested in the factory, leaving the adaptation to the on-site mains voltage, the adjustment of the AEC and the functional tests to be performed.

When the measurements to be made (kV, mAs, etc.) are within the tolerances stated in these instructions, this confirms that the settings made in the factory have not changed and the equipment is fully serviceable.

The equipment is set to **400 V, 2-phase** on delivery.

Protective measures

System power supply

It is very important that any intervention in the equipment starts with disconnecting it from the power supply with the main circuit-breaker. Before removing or inserting any of the printed circuit boards, switch off the equipment.

⚠WARNING

If the system is only switched off at the control panel, the line voltage will still be present at the generator line connection (see wiring diagram SPB7-250.844.01...).

A life-threatening hazard of electric shock exists.

➪ **Disconnect the mains cable and comply with the information on this page.**

⚠WARNING

After shut-down of the system, there may still be 380 V DC present on the intermediate circuit.

A life-threatening hazard of electric shock exists.

➪ **Disconnect the mains cable and comply with the information on this page.**

PC boards

⚠CAUTION

The p.c. boards contain electrostatic highly sensitive components.

If disregarded, the components could be damaged.

➪ **Use ESD equipment, ground prior to making contact and place the components on a conductive surface.**

Metal curtain

⚠WARNING

The edges of the metal curtain of the stand are very sharp.

They may cause severe injury.

➪ **Apply the protective strips as mentioned in section(Link chapter) after removing the covers from the stand. Remove the protective strips only when the covers are to be mounted or when vertical adjustment of the swivel arm system is necessary.**

Measurements with the oscilloscope

⚠WARNING

The existing ground conductor in the mains cable must under no circumstances be disconnected when operating the oscilloscope.

A life-threatening hazard of electric shock exists.

➪ **For measurements in which a resulting ground loop may falsify the measuring result, use the differential amplifier (difference measurement).**

Scope of delivery

The **MAMMOMAT Novation^{DR}** is normally packed in two crates and one cardboard box (the number of packages depends on the customer"s choice):

The MAMMOMAT Novation^{DR} has an area loading of 800 kg/m2; according to DIN 1055T3, 1000 kg/m2 are permissible.

Crate (length: 210 cm, width: 80 cm, height: 150 cm), 360 kg plus 60 kg (pallet)

The crate contains the MAMMOMAT NovationDR stand.

Crate (lenght: 210 cm, width: 80 cm, height: 120 cm)

The crate contains:

- Accessories, e.g. cover panels, WorkStation, compression plates, documentation, installation material
- Radiation shield

Cardboard boxes (length: 90 cm, width: 80 cm, height: 60 cm), approximately 60 kg

This cardboard box contains the detector.

NOTE	**The detector package is temperature sensitive, from 10° to 40° Celsius.**

NOTE	**The detector package has to be disposed locally, after the installation.**

Unpacking the system components

As a general rule, the directional marks on the crates should be observed during transport, storage and unpacking.

The stand crate is bolted together, while the cardboard box is secured with plastic straps.

⚠CAUTION

The unpacking must be performed with due care.
There is a risk of foot injuries when handling heavy parts.

➪ **Wear safety footwear.**

MAMMOMAT stand

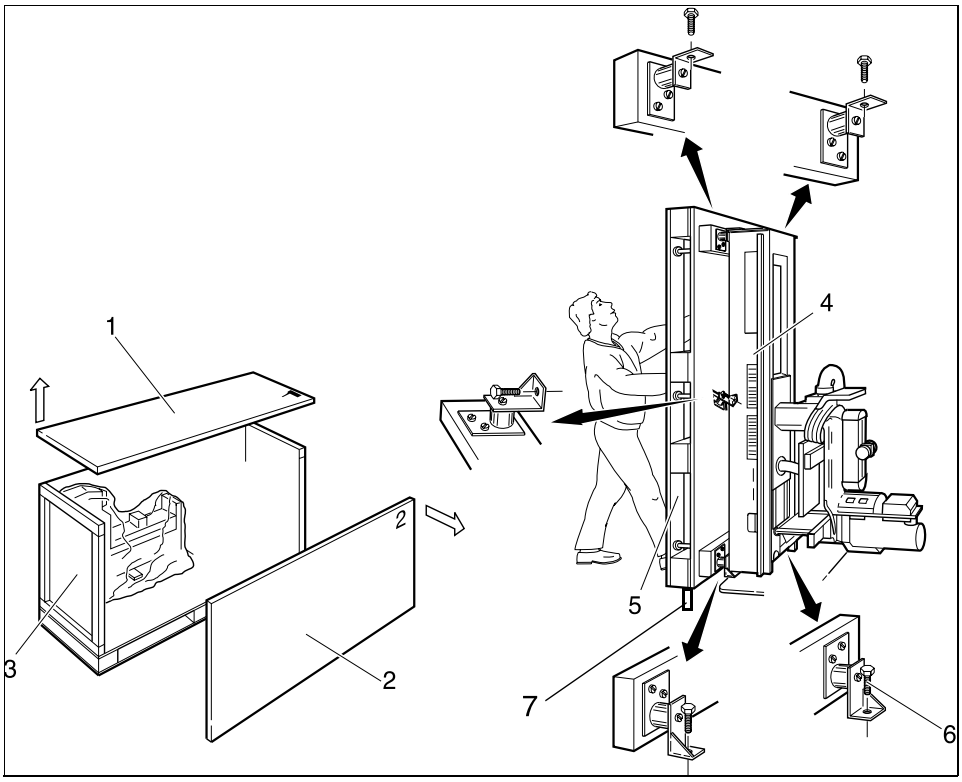

Fig. 1: Unpacking the MAMMOMAT stand

1. Open the stand crate by removing the top (1/Fig. 1 / p. 12)and then the side wall. (2/Fig. 1 / p. 12)
2. Remove the remaining walls(3/Fig. 1 / p. 12).
3. Remove the wooden bar(7/Fig. 1 / p. 12) at the bottom of the pallet.
4. Upend the stand (4/Fig. 1 / p. 12) with pallet (5/Fig. 1 / p. 12) (two persons are required).
5. Loosen the six bolts(6/Fig. 1 / p. 12) and remove the pallet (5/Fig. 1 / p. 12).

Radiation protection shield and control console

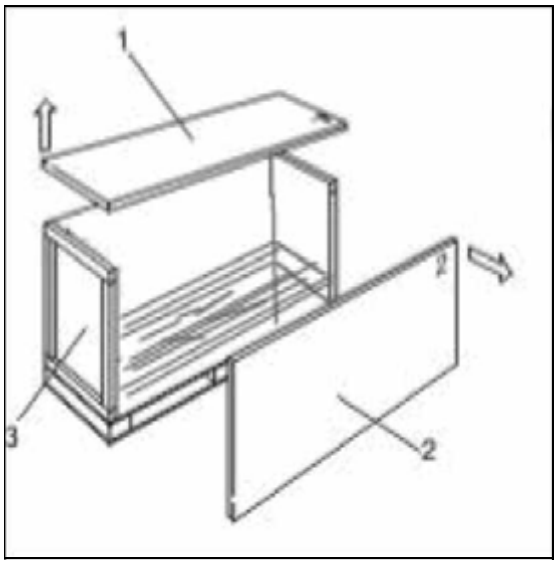

Fig. 2: Unpacking the radiation shield

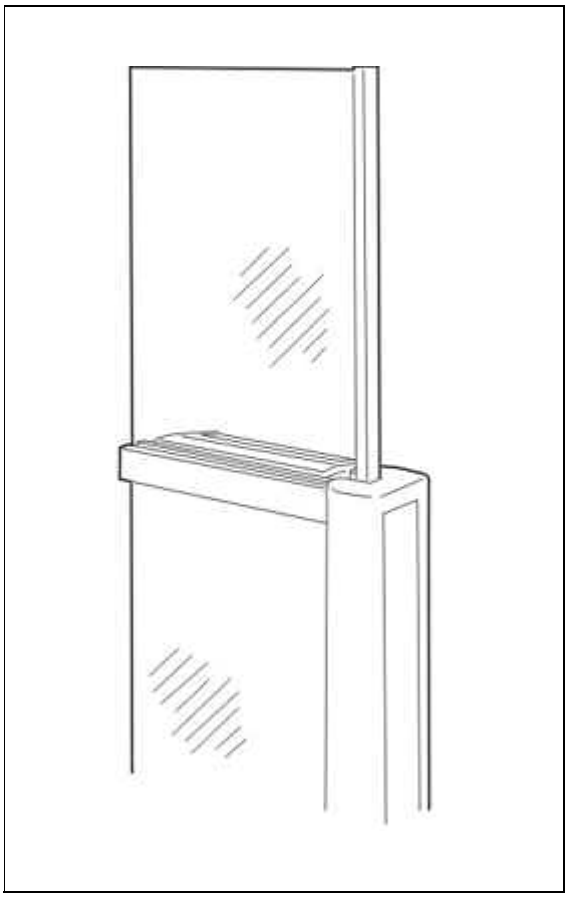

Fig. 3: Radiation protection shield

1. Open the console crate by removing the top (1/Fig. 2 / p. 13).
2. Lift out the lead glass (store it in a safe place), accessories, covers and installation material.
3. Remove the protective cover from the console.
4. Assemble the radiation protection shield and separate the console according to SPB7-230-031.07.xx.xx.

Acquisition workstation

1. Open the cardboard boxes and lift out the computer, monitor and accessories.
2. Assemble the computer according to the user guide that is supplied with the system.

Removing the transport safeguards

Swivel arm

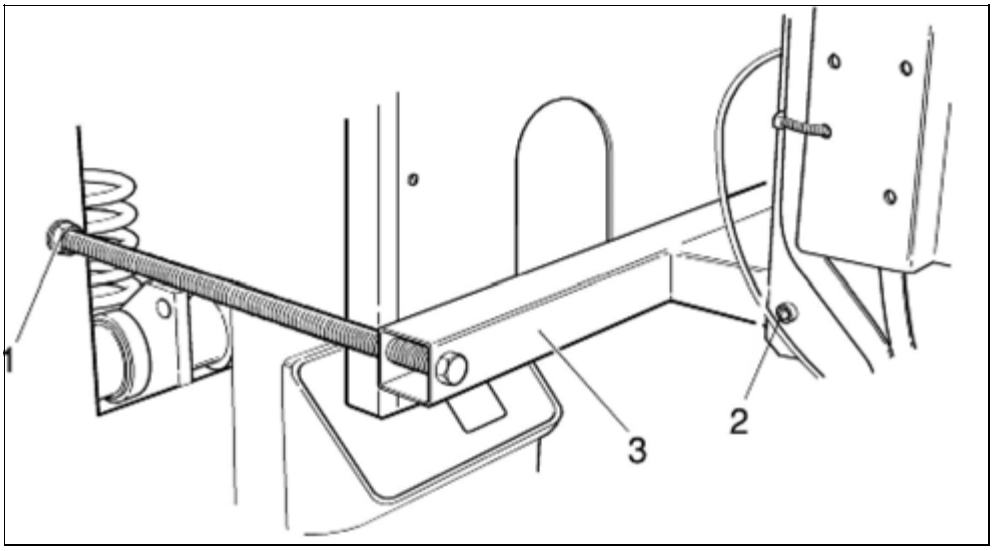

Fig. 4: Swivel arm system transport safeguard

1. Loosen the transport safeguard nuts(1/Fig. 4 / p. 14) and remove the tube head screws(2/Fig. 4 / p. 14)
2. Remove the red transport safeguard (3/Fig. 4 / p. 14).

Generator transportation safety plates

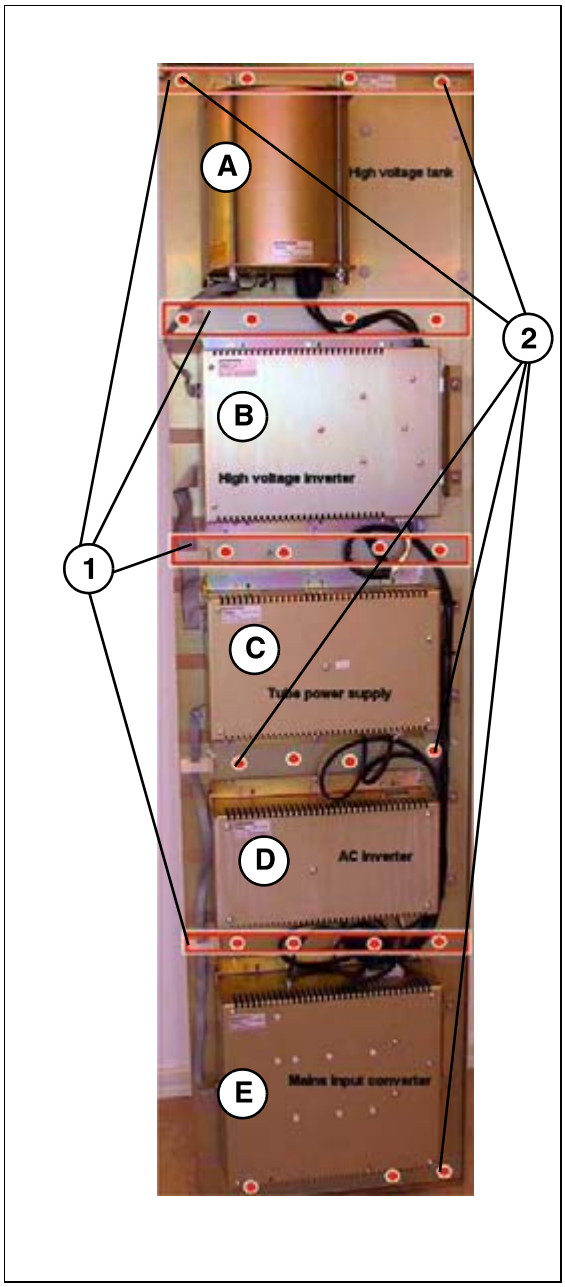

Fig. 5: Generator transport safety plates

Pos. A	High voltage tank
Pos. B	High voltage inverter
Pos. C	Tube power supply
Pos. D	AC inverter
Pos. E	Mains input converter
Pos. 1	Safety plates for generator transportation
Pos. 2	Screws for fixing the generator

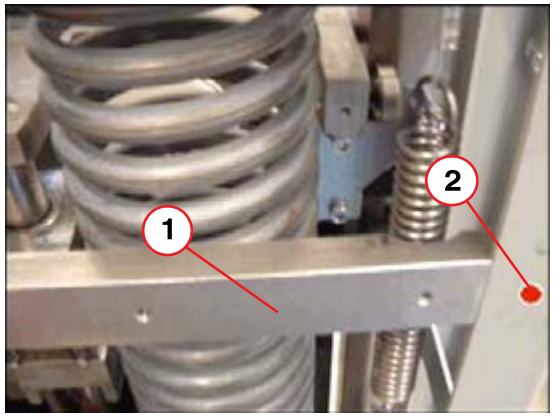

Fig. 6: Zoom of transportation safety plate

Pos. 1	Screws for generator transportation safety plate
Pos. 2	Screws (left and right side) that hold the safety plate

1. To be able to access the inside of the stand you have to loosen all marked screws in (Fig. 5 / p. 15)) on the generator panel.

2. Swivel out the generator panel to remove the generator transportation safety plates(1/Fig. 6 / p. 15)
3. Remove all four generator transportation safety plates(1/Fig. 5 / p. 15) taking out two screws per plate (2/Fig. 6 / p. 15) that hold the generator transportation safety plate. (2/Fig. 6 / p. 15) Store the plates on site, so you can re-use them in case the system needs to moved.
4. Close the generator panel and insert only the specified five screws(2/Fig. 5 / p. 15) to fix the generator panel.

Lifting carriage

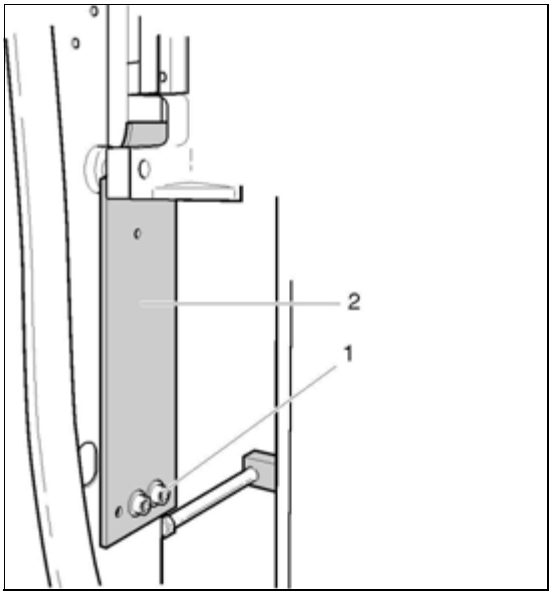

Fig. 7: Transport safeguard for the lifting carriage

Pos. 1 screws

Pos. 2 transport safeguard

1. Loosen the two screws(1/Fig. 7 / p. 16) and remove the red transport safeguard(2/Fig. 7 / p. 16) Reinsert screws(1/Fig. 7 / p. 16), they might be needed for service purposes.

NOTE

The lifting carriage transport safeguard shall be kept for service purposes(Fig. 7 / p. 16)

2. Cut and remove the cable tie securing the balancing spring during transport.

Rotary motion

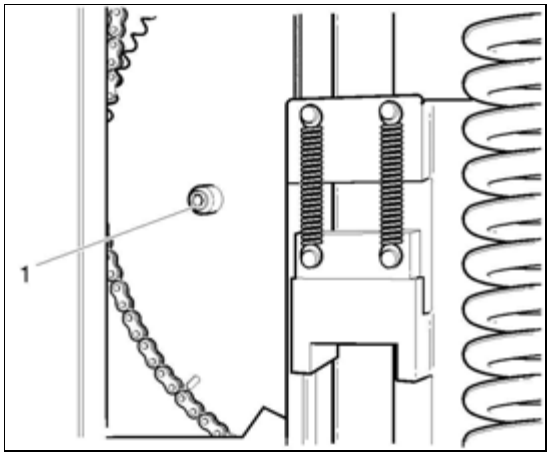

Fig. 8: Transport safeguard for rotary motion
Pos. 1 screw

1. Remove the transport safeguard screw (1/Fig. 8 / p. 17) with spacer to enable rotary motion. The screw and the spacer should be kept for the mounting of the lifting carriage transport safeguard.
2. Remove the transport safeguard on the balancing spring.

Check ball bearings

The lifting carriage is equipped with twelve ball bearings. (Fig. 9 / p. 18) Check that all twelve ball bearings are in place and that they show no sign of damage.

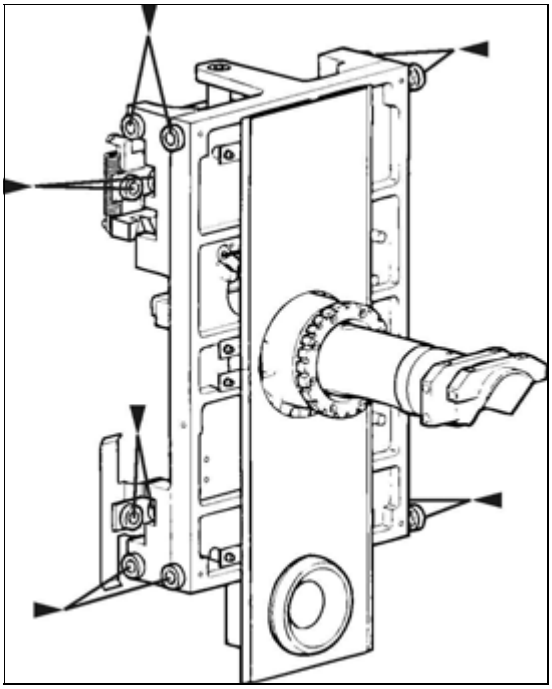

Fig. 9: Ball bearings

Protective strips for the metal curtain

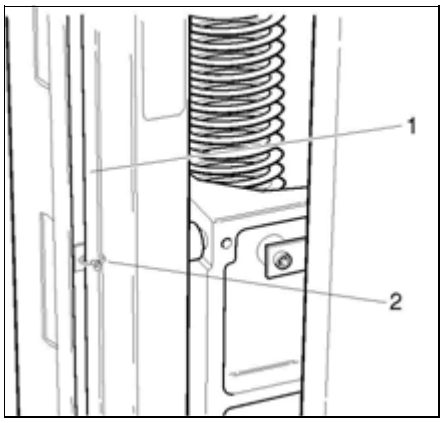

Fig. 10: Protective strips for metal curtain

Pos. 1 protective strips

Pos. 2 holders

The edges of the metal curtain are very sharp and are therefore provided with protective strips(1/Fig. 10 / p. 19) on delivery. These strips must always be applied onto the edges of the metal curtain during service and maintenance work.

⚠CAUTION

Remove the protective strips before performing vertical adjustment of the swivel arm.

If not removed, the protective strips could be damaged.

➪ **Make sure the protective strips are removed before adjustments are carried out.**

Holders(2/Fig. 10 / p. 19) for storing the protective strips when not in use are provided on both sides of the curtain.

Removing the BRICK transportation screws

Remove the transportation screws(1/Fig. 11 / p. 20).

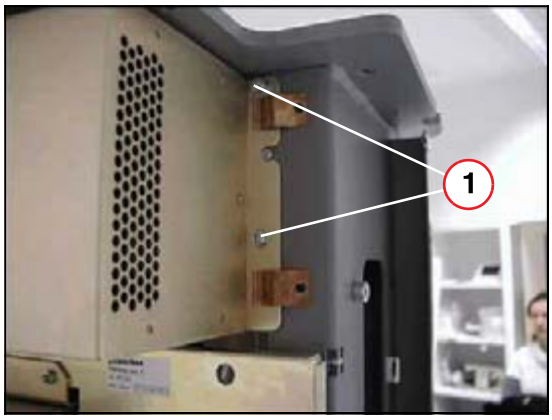

Fig. 11: Remove BRICK transportation screws

Pos. transportation screws

Room planning

NOTE

- **min. 150 mm if the unit is not secured to the floor (in a special service situation, the generator must be swung out from behind at the stand; for this, the stand must be moved 500 mm away from the wall).(1/Fig. 12 / p. 21)**

  min. 500 mm if the unit is secured to the floor.(1/Fig. 12 / p. 21)
- **If needed, additional cable conduits, Part No. 64 38 795 X041E, can be ordered for the connection between the stand and the radiation shield.(2/Fig. 12 / p. 21)**
- **For safety reasons, the acquisition workstation must be set up outside the area, per IEC 60601-1-1(3/Fig. 12 / p. 21)**

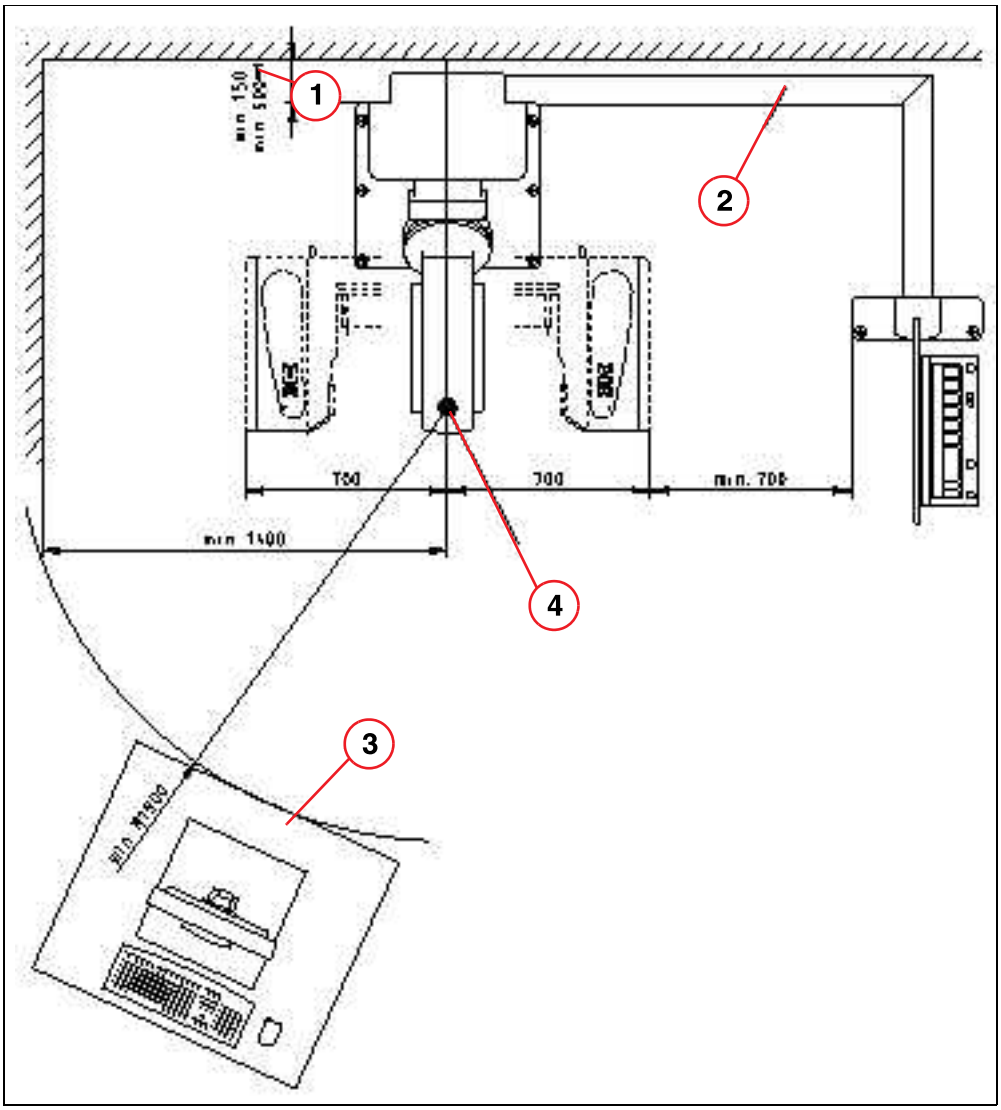

Fig. 12: Room planing

Pos. 1 min. distance system wall

Pos. 2 2 cable conduits (each 2 m) included in the shipment for “on-the-floor” laying of cables

Pos. 3 acquisition workstation

Pos. 4 Focus

NOTE

The room planning example shows one possible arrangement of the units. Other arrangements are possible, provided the necessary unit distances based on the available cable lengths are maintained.

For more details on room planning, see the **Planning Guide** SPB7-250-891.02.xx.xx

Installing the cable ducts

1. Position the cable ducts (1/Fig. 13 / p. 23) to the stand and the radiation shield respectively.
2. Leave sufficient space, approx. 10 mm, between the cable ducts (1/Fig. 13 / p. 23) and the base plate of the stand (2/Fig. 13 / p. 23) to allow for the mounting of the cable outlet cover(3/Fig. 13 / p. 23).
3. Check that the cable duct(1/Fig. 13 / p. 23) is slightly overlapped by the cable outlet cover(3/Fig. 13 / p. 23).

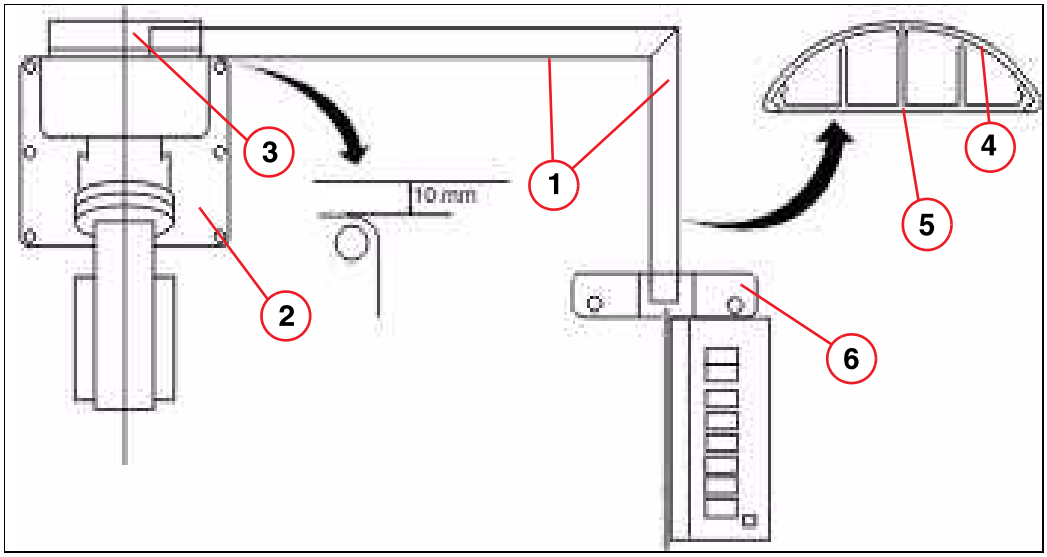

Fig. 13: Installing the cable ducts (top view)

1. Mark the outlines of the cable ducts(1/Fig. 13 / p. 23) on the floor.
2. Cut the bottom of the cable ducts(5/Fig. 13 / p. 23) and the cable duct cover (4/Fig. 13 / p. 23) to proper length.

NOTE

Installing the cable ducts (Fig. 13 / p. 23) shows a right-angled installation of the cable ducts.

If the console is to be installed at another angle to the stand, you just have to cut the cable ducts correspondingly.

3. Fasten the bottom plate of the cable ducts(5/Fig. 13 / p. 23) to the floor according to the marking using double-sided adhesive tape.
4. At the radiation shield, cover the cable entry not used with the enclosed cover plate(6/Fig. 13 / p. 23).

Aligning the stand

1. Align the stand vertically by means of the levelling screws (1/Fig. 14 / p. 24). For adjustment of the levelling screws, use a ratchet spanner 1/2" with extension (without socket).

NOTE	**It is important that all six screws bear against the floor.** **This is to ensure optimum stability of the stand.**

2. Cover the levelling screws with the cover discs supplied.

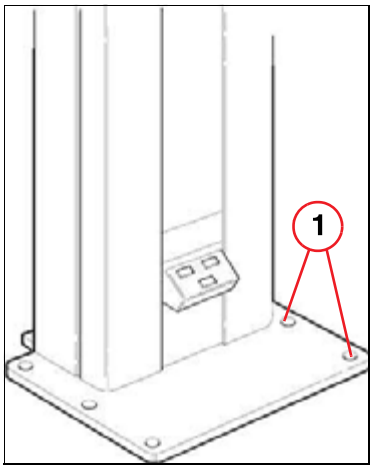

Fig. 14: Levelling screws
Pos. 1 screws

Free-standing radiation shield (option)

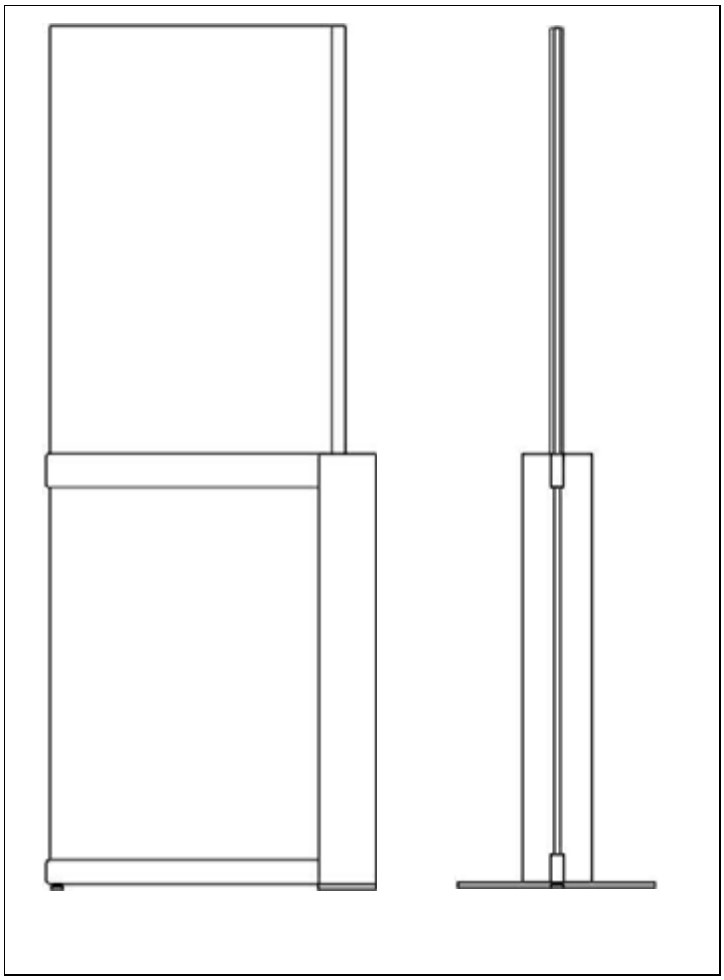

Fig. 15: Free-standign radiation shield

The free-standing radiation shield must be bolted to the floor, see separate instructions enclosed with the radiation shield (SPB7-230.031.07.xx.xx).

Control console

The control console can be mounted

- to the radiation shield
- to the wall - horizontally or vertically as shown in (Fig. 16 / p. 26)(Fig. 17 / p. 26) below
- on a table

in the examination room or in an adjacent room with radiation-proof windows. It is important that the control console is placed so that the operator has a good view of the patient from the control console.

Ensure that the control console is attached to the wall with adequate safety margins. Dowels and screws are not supplied. Please obtain these locally and ensure that they are suitable for the material used in the wall. The control console has a weight of 4 kg.

There are two cable outlets on the separate control console; one at the back and one on the underside. On delivery, the cable is led through the outlet at the back of the control console.

If the control console is mounted to the wall or radiation shield, the cable shall be led through the outlet on the underside.

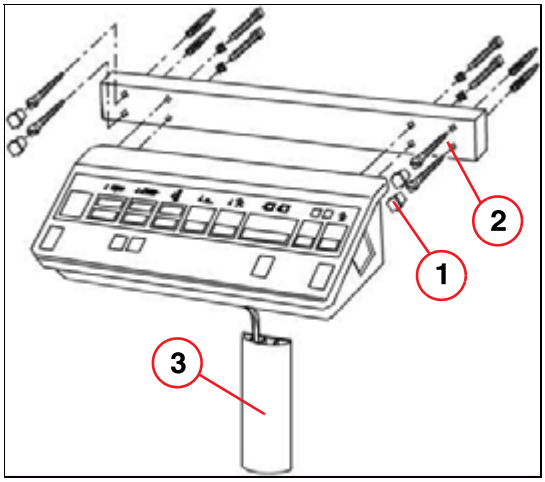

Fig. 16: Wall-mounted control console / horizontal mounting

Pos. 1	Plastic cap
Pos. 2	∅ 6,5 mm
Pos. 3	Wall-mounted calbe duct is recommended

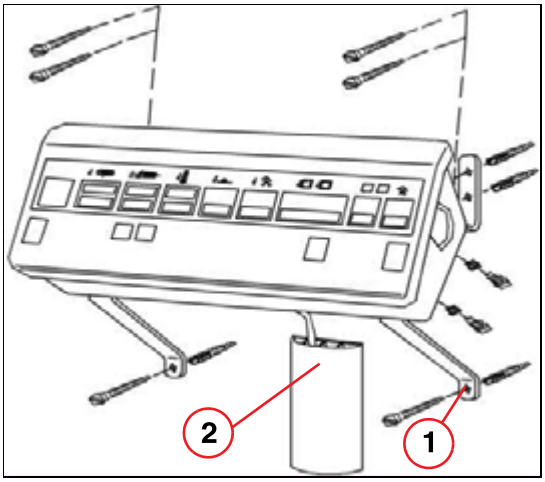

Fig. 17: Wall-mounted control console / vertical mounting

Pos. 1	∅ 6,5 mm
Pos. 2	Wall-mounted calbe duct is recommended

If the control console is to be mounted on a table, the minimum/maximum length of the screws penetrating into the control console must be observed(Fig. 18 / p. 27)

(Fig. 19 / p. 27) shows how the control console is to be mounted on the free-standing radiation shield (option), see separate instructions enclosed with the radiation shield.

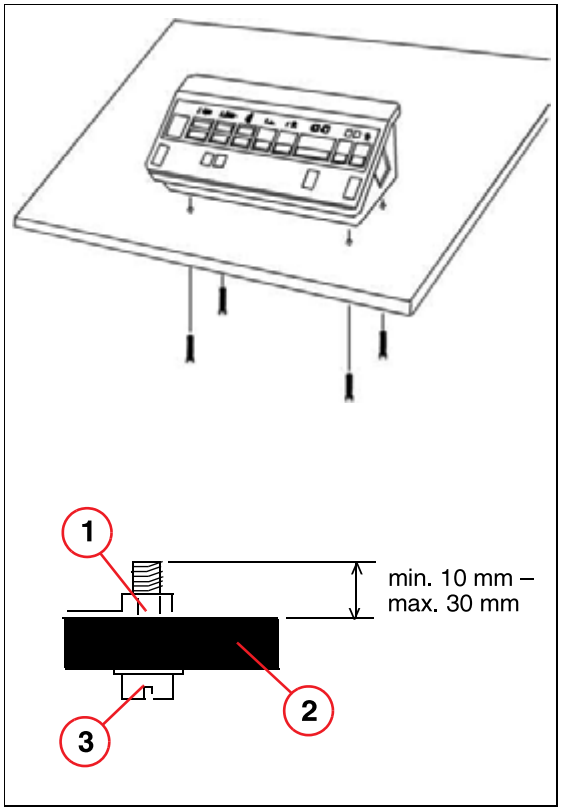

Fig. 18: Control console mounted on table

Pos. 1 Welded nut

Pos. 2 Table top

Pos. 3 M6

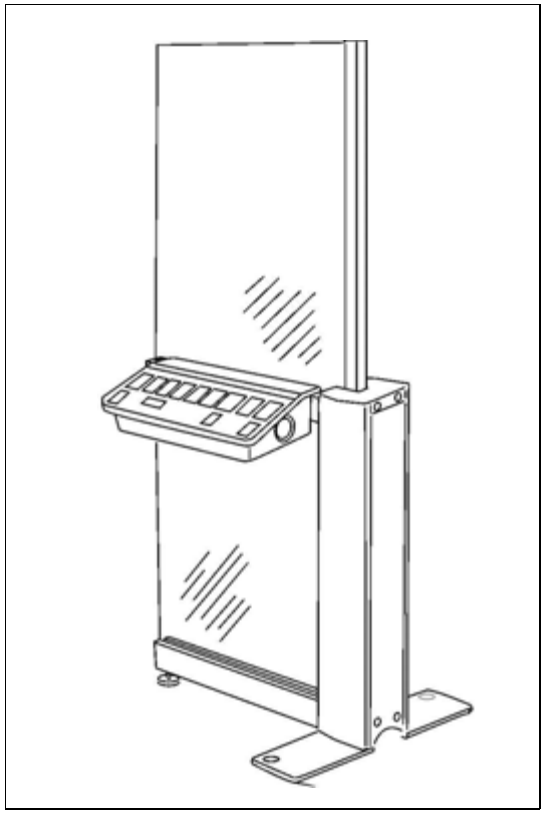

Fig. 19: Control console on free-standing radiation shield (option)

Bolting the stand/radiation shield to the floor

Should a permanent fastening to the floor be required due to local regulations (for example in areas subject to earthquakes) or due to the quality of the floor covering, the stand/radiation shield can be bolted to the floor by means of safety dowels and screws. When bolting the stand/radiation shield to the floor, the fixing screws shall pass through the hollow levelling screws (1/Fig. 20 / p. 28)and(1/Fig. 21 / p. 29).

NOTE	**Cable lead-in from the floor only on-the-floor calbe conduits included in the shipment cannot be used. For on-the-floor cable coduits (Factory adjustments / p. 8)(Protective measures / p. 9)**

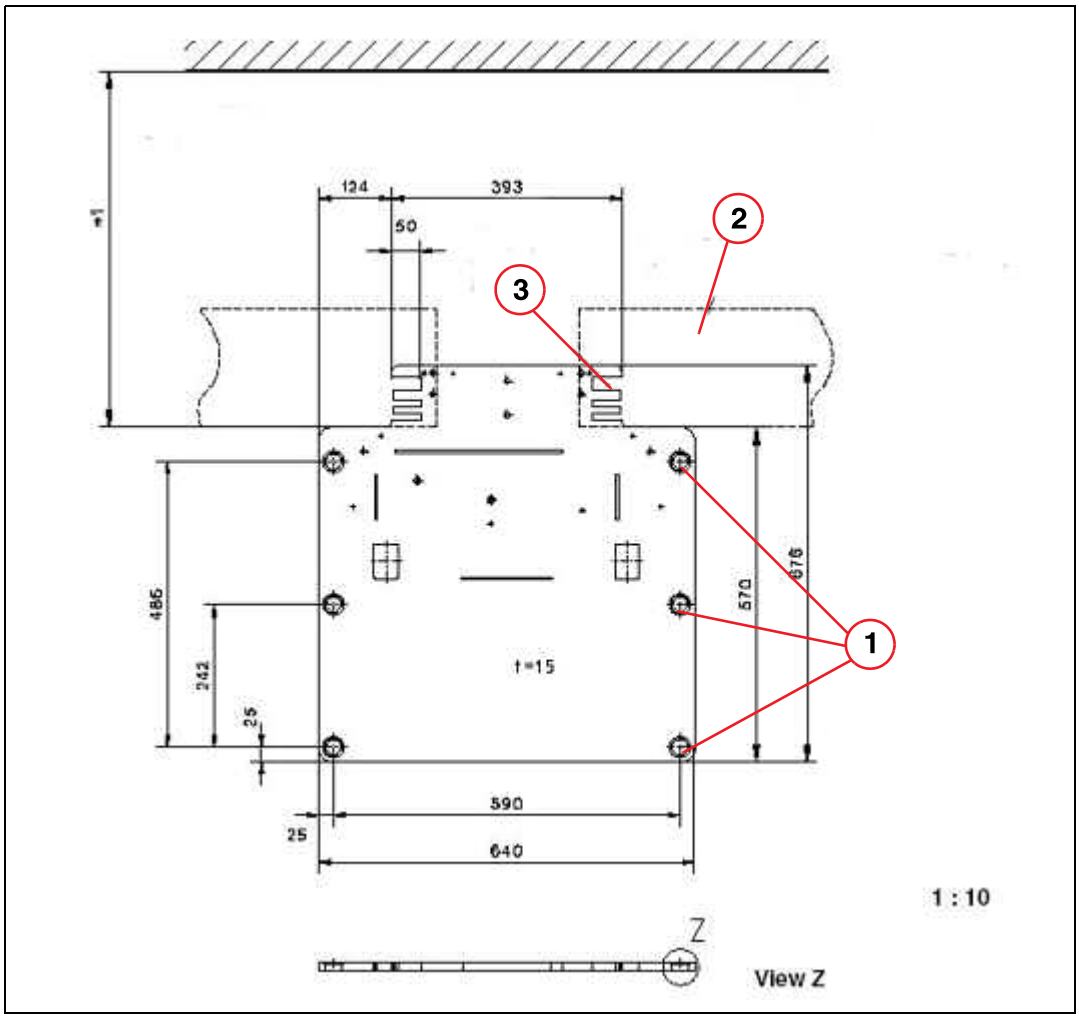

Fig. 20: Base plate for the stand

Pos. 1 screws

Pos. 2 Cable lead-in from the floor left or right. Obtain cable conduits on site.

Pos. 3 Slots for cable lead-in

NOTE	**The base plates shall be secured with at least four screws each (two on either side).(Fig. 20 / p. 28)**

NOTE	**Max pull forces that occur per mounting point: 1.5 kN(Fig. 21 / p. 29)**

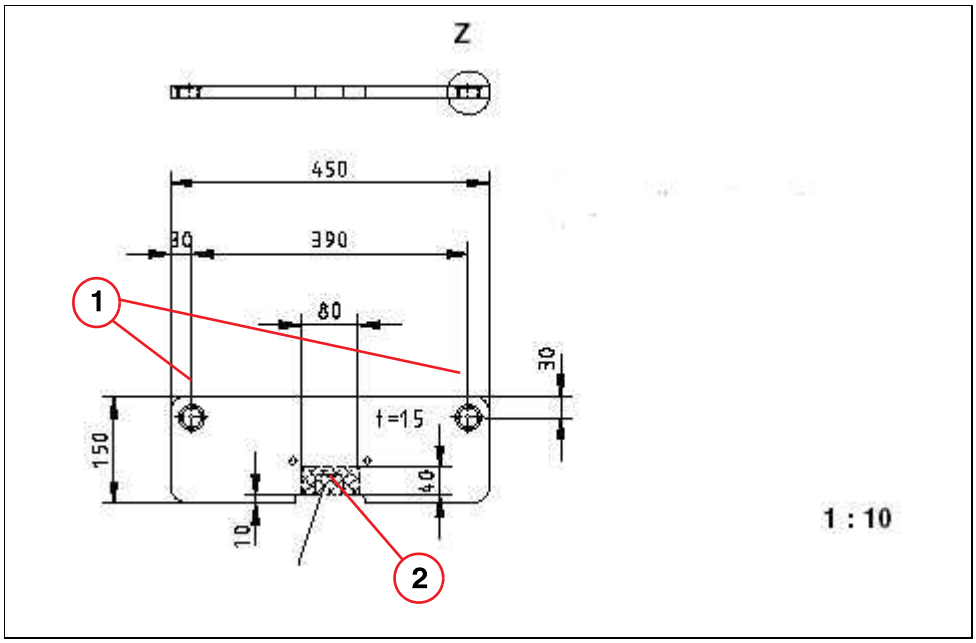

Fig. 21: Base plate for the radiation shield

Pos. 1 screws

Pos. 2 Room for calble lead-in in floor

1. Position the stand/radiation shield and mark out appropriate fixing holes on the floor using the base plate as a template.
2. Drill the holes and insert dowels and screws.Tighten the screws to 10 Nm.

Example of the leveling screws

NOTE	**If safety screws are used, the manufacturer's specifications and instructions must be observed(Fig. 22 / p. 30)** **With installation on the solid floor, cut out the floor covering. Concrete quality for the solid floor, min. C20/25.** **Mounting materials must be obtained locally**

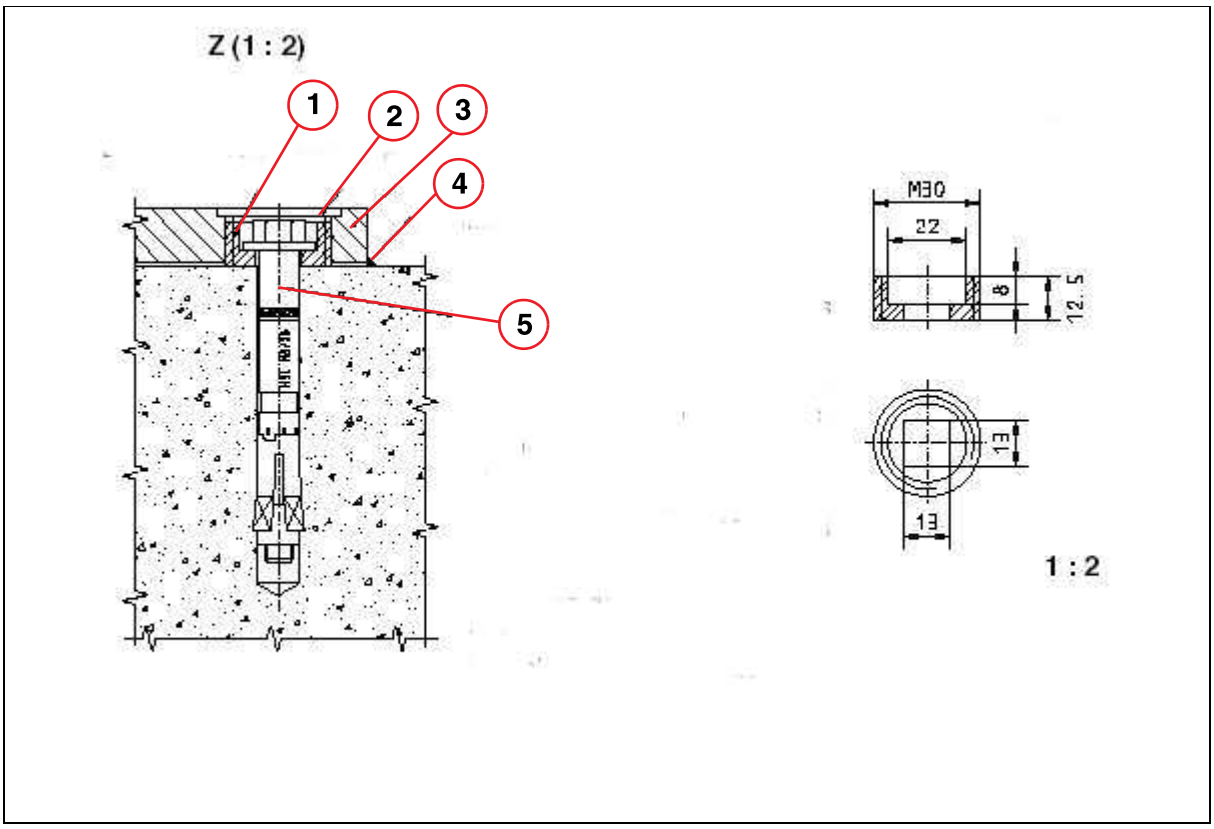

Fig. 22: Screws for the base plate

Pos. 1	Leveling screw
Pos. 2	Cover plate
Pos. 3	Floor plate
Pos. 4	Caulk all around using sanitary silicon
Pos. 5	E.g. Hilti heavy duty anachor bolts HSL M8/20

NOTICE

The screws must not come in contact with any conductive materials such as reinforcing iron, since the grounding could be compromised.

➪ **Stay clear of conductive materials when fastening the screws.**

Mount the metal springs on the base plate

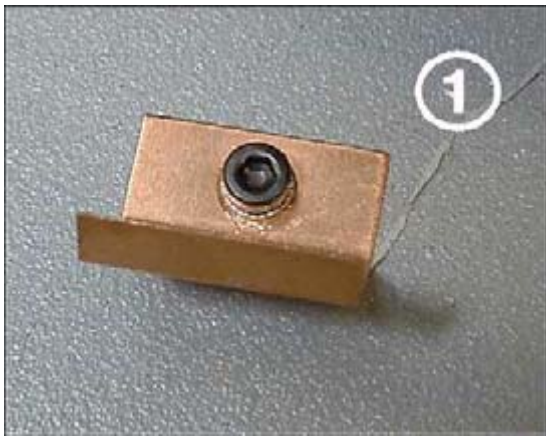

Fig. 23: Metal springs
Pos. 1 Metal springs to be mounted on the base plate

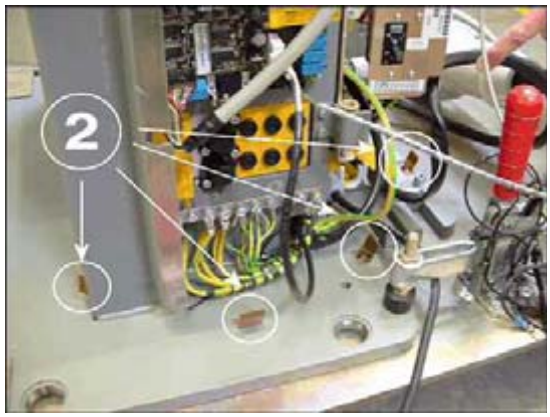

Fig. 24: Mount springs on base plate
Pos. 2 Metal springs

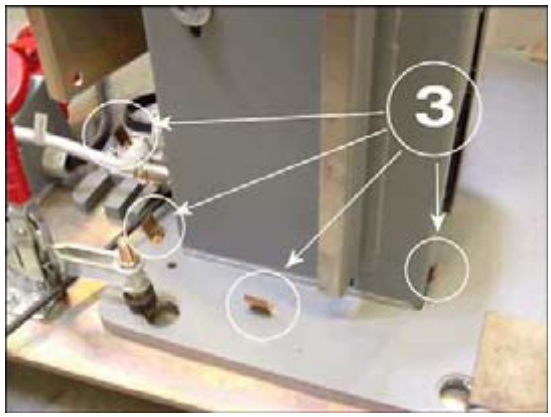

Fig. 25: Mount springs on base plate
Pos. 3 Metal springs

1. Mount eight metal springs(1/Fig. 23 / p. 31) on the base plate (2/Fig. 24 / p. 31)(3/Fig. 25 / p. 31)

Control console cable

Connect the control console cable to the bottom of the MAMMOMAT stand and to the control console.

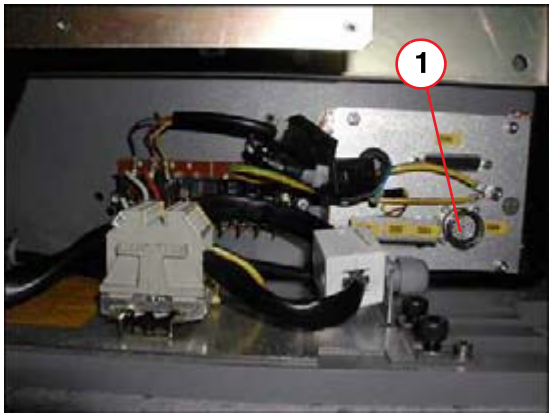

Fig. 26: Control console connection
Pos. 1 cable connection

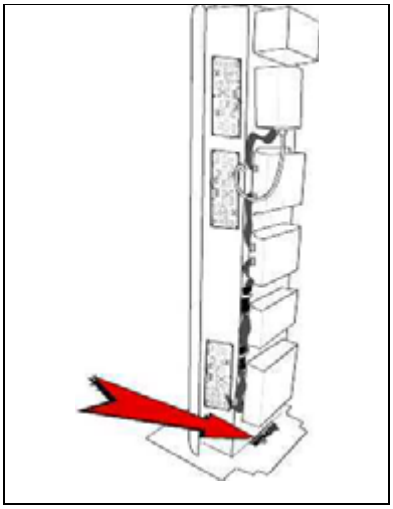

Fig. 27: Location of Control console connection

Fibre optics cable

Handling

- Always handle fiber optic cables delicately and by the connector housing.
- Avoid acute bends in the cable, as this could break the fiber optic link inside the cable

Connecting

- Always perform one connection at a time.
- Remove the dust caps on the fiber optic connectors (you may have to rotate the cap to loosen it).
- Holding the cable by the connector housing, insert the cable connector into the connector on the device, making sure to align the keying features so the connectors are properly mated, then turn the connector clockwise to lock it.
- To disconnect the cable connector, turn it counterclockwise, then pull it from the connector on the device.

Cleaning

- Clean the connectors on both the cable and the devices with a lint-free, alcohol-dampened cloth.
- Thoroughly wipe the side and end of the ferrule.
- Blow the ferrule with compressed air, or allow it to air dry, before reconnecting the cable.
- Visually inspect the ferrule for lint.
- When not connected, replace the protective cap onto connector ends.

The DirectRay Interface card is PCI-bus compatible.

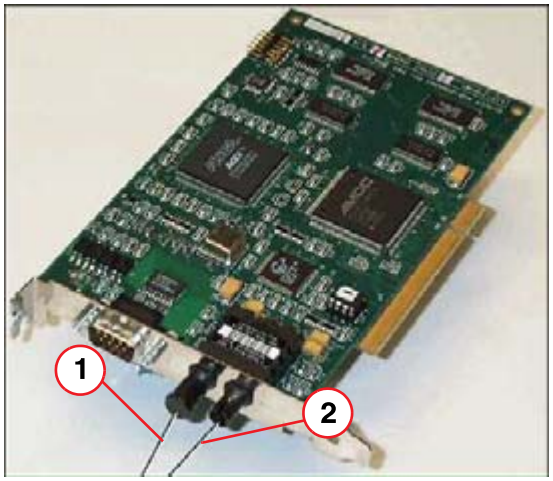

Fig. 28: PCI card connection

Pos. 1 RX fiber optic cable (shown with cap on conector)

Pos. 2 TX fiber optic cable

PCI card connection (Fig. 28 / p. 33)shows the PCI interface card fiber optic connectors used for the cable that connects the BRICK to the PCI interface card.

1. Connect the fiber optics cable (1/Fig. 28 / p. 33)(2/Fig. 28 / p. 33) to the computer.
2. Connect the fibre optics cable (2/Fig. 29 / p. 34)(1/Fig. 29 / p. 34) to the BRICK in the MAMMOMAT stand.

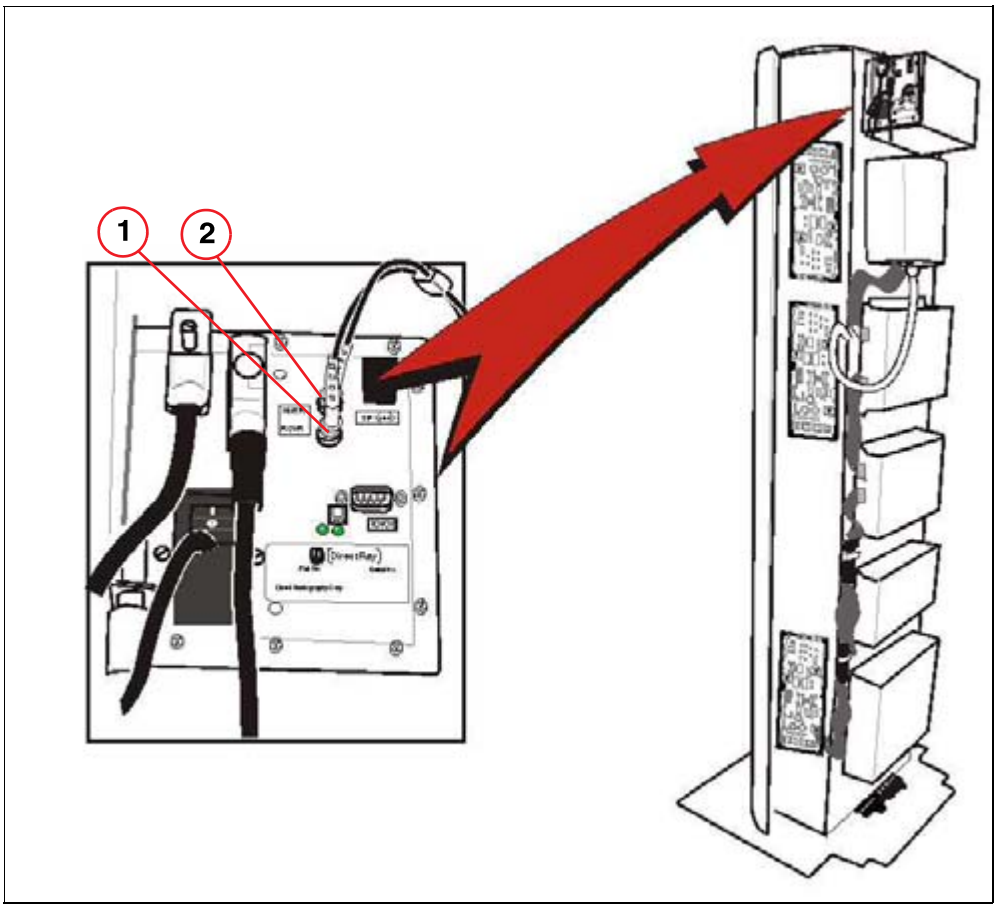

Fig. 29: BRICK connection

Pos. 1 RX 605 fibre optics cable

Pos. 2 TX 604 fibre optics cable

Tab. 2 Changes since last version

Chapter	Page	Change
All	All	DMS conversion.
Prerequisites	5	Adapted, so it fits for OPDIMA as well.
Scope of delivery	11	Added a not to dispose the detector package locally.